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ABSTRACT

This study gauges the secondary impacts of Ontario, Canada's higher education system, in an attempt to define the boundary of production that encloses the economic activities involved in sustaining the demands put on the system by normal university activities. The accounting framework, upon which the impact model is based, is Statistics Canada Interprovincial Input Output Tables for 1984, which was refined to deal with price changes, wage rate increases, and productivity increases between 1984 and 1992. The study found that, while it may be difficult to ascertain precisely the economic value of educating engineers, scientists, professionals, and researchers, there is no doubt about the importance and significance of this contribution. Also, universities are major employers of people and significant contributors to the economic stability and vigor of the provincial economy, as well as of regional economies. Universities sustained over 182 thousand person years of employment and added $9 billion to the Gross Provincial Product of Ontario in 1992. A one percent drop in Ontario funding of universities carries with it serious declines in income and employment for the province, the regions, and the Canadian economy at large, and these declines are multiples of the original decrease. Four tables and four figures illustrate the study's findings. (JDD)

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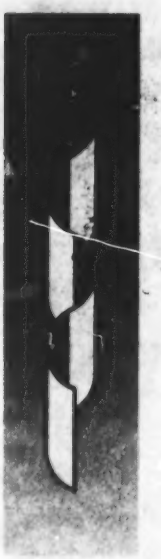
THE ECONOMIC IMPACT OF UNIVERSITY EXPENDITURES

Discussion Series
- Issue 2 -



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THE ECONOMIC IMPACT OF UNIVERSITY EXPENDITURES

By
A.A.Kubursi

McMaster University
and
Econometric Research Limited

Commissioned by the Alliance for Ontario Universities

Discussion Series
- Issue 2 -

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INTRODUCTION

There is hardly a university in Ontario that is not facing funding difficulties. Government has increasingly treated the universities as an economic and financial burden. This flies in the face of the fact that universities make substantial primary economic contributions to the overall economy, through the provision of high quality, advanced and accessible education; and through training scientists, engineers, business leaders, professionals and researchers. In the cumulatively globalized international economy these skills have assumed survival imperatives. Perhaps less appreciated are the secondary economic contributions universities make to the provincial and local economies. The university sector is now a major employer of people, and its activities are credited with shoring up and balancing several towns and regional economies.

We do not attempt, in this study, to measure the primary contributions universities make to the provincial economy. It would be difficult, if not impossible, to measure the many contributions which university graduates and university institutions make to the province and Canada. Yet there is no doubt as to how valuable this contribution is and will certainly continue to be. Our task is more modest. We have gauged the secondary impacts of the system using a state-of-the-art impact model that is now a standard tool at several Ontario ministries including Tourism and Recreation, Transportation, Natural Resources and the Environment.

The accounting framework, upon which the model is based, is Statistics Canada Interprovincial Input Output Tables for 1984. Several adjustments and refinements were also introduced to the basic framework to deal with price changes, wage rate increases and productivity increases between 1984 and 1992. The details of these adjustments are presented in the mathematical appendix. University expenditure data were derived from the Council of Ontario Universities', *Financial Report of Ontario Universities, 1991-1992.*

Impact analysis does not attempt to measure the net incremental contribution of universities to the economy. In a way, this is unnecessary and meaningless. Every economic activity has an opportunity cost of alternatives forgone. Rather, our modest aim is to define the boundary of production that encloses the economic activities engaged in sustaining the demands put on the system by normal university activities.

Typically, a dollar spent by a university on equipment or labour circulates and recirculates within the economy, multiplying the effects of the original expenditure on overall economic activity. This process is commonly referred to as the **economic multiplier process**. It operates at several levels. The initial

expenditures on wages and materials are the direct expenditures of the spending sector and are called the direct (initial) effects. Subsequent purchases by suppliers of materials and services to sustain the original and derivative demands are called the indirect effects. Induced effects emerge when workers in the sectors stimulated by initial and indirect expenditures spend their additional incomes on consumer goods and services. This circulation and recirculation of impacts is contingent, however, on local sourcing of materials. To the extent that imports are purchased this recirculation process is aborted.

There is nothing magical about this process and it does not operate in a vacuum. If the economy is operating at full employment, additional demands placed on the system reflect themselves in higher prices and wages as additional workers are attracted to the universities and are drawn from other employments.

PROVINCE WIDE IMPACTS OF TOTAL UNIVERSITY EXPENDITURES

Typical measures of economic impacts include gross output (sales or turn-over), Gross Provincial Income (value added), employment, tax revenues by type of tax and the level of government collecting it, and finally, multipliers. (The definitions for all these terms are in the *Glossary of Terms* appended to the study.) Each of these measures presents an aspect of impact. That is why it is advisable to use all of them in order to gain a comprehensive perspective of impact.

The gross output measure is indicative of the total sales and transactions triggered by the operations of universities. It adds all the transactions made at all the rounds of expenditures. Sales and resales are included together. Thus, it is a gross measure that double counts several items. Its utility is in indicating the level of taxes collected at each round and the volume of economic activity associated with the original expenditure. A more significant dimension of impact is gained by looking at the value added sustained by the expenditures. There are two ways to measure value added. The first involves accounting for all the sales of the activity minus all the purchases made to sustain these sales. The other method involves looking at factor payments--the income of factors of production involved in sustaining the operations of the concern (wages, rent, interest and profit). That is why value added and income are treated as synonymous. In this way, value added is a measure of the net output produced by the activity. Employment may be measured in terms of the number of person years needed to sustain the net output of the activities of the concern or, in terms of the number of person years associated with a fixed amount of expenditure.

Irrespective of the impact indicator used, we distinguish between direct, indirect and induced impacts. Multipliers are calculated as the ratio of total impact to the original expenditure, except in the case of employment where total employment impact is divided by initial employment.

In 1992, consolidated university and affiliated colleges' expenditures on operations ($2.6 billion), other non-credit ($43 million) and ancillary enterprises ($431 million) exceeded $3 billion. In addition, universities spent $581 million on sponsored research, $267 million on capital, and $160 million through trust and endowments. In total, universities and their colleges spent over $4.1 billion in 1992. These expenditures sustained a direct employment impact (at the universities and the closely related industries supplying the materials used at universities) of over 96,855 person years (Table 1 and Figure 2). This is larger than all the Ontario textile industry employment or, for that matter, the entire Ontario paper and pulp industry, or that of utilities, or even the entire direct employment in chemical and chemical products industries, etc. The total employment impact exceeds 182,079 person years. This is not surprising given the large labour income component of direct university expenditures (about 70%) and the large proportion of services and other labour intensive products in direct and indirect university expenditures. Put differently, universities "sustain" 44.3 person years of employment per one million dollars of expenditure; a figure that compares very favourably with other industrial expenditures.

Universities, generally, tend to employ labour at the high-end of the wage scale, thus providing the local economies in which they are located with high wage and better paying job opportunities. The average direct university wage is $46,689 in 1992 prices (Table 1) which is significantly higher than the overall Ontario average wage of $30,057 (Statistics Canada. Canadian Economic Observer. January 1993).

Industries with large shipment values do not necessarily produce high value added or domestic incomes. Universities are an exception in that their value added impact is larger than their gross output impacts. While in 1992, university expenditures resulted in a total sales value (turnover) of $8.4 billion, the value added (income) associated with this sales impact was about $9.3 billion. This translates roughly into $2.27 of income (value added) for every dollar of expenditure. The returns on the Ontario funded portion ($2.2) of these expenditures were even higher--over $4 per unit of Ontario government funding. Generally, gross output is always larger than value added. The fact that the universities' value added is larger than their gross output impacts is a peculiarity that results from our definition of initial gross output to exclude wages and to reveal only non-wage purchases of goods and services. When initial gross output is defined to include wages and salaries, the component of the universities' value added in total gross output will still be inordinately high.

Only about $1.4 billion of the $4.1 billion total expenditures is identified to have been spent directly on products and services by the Ontario universities and their affiliated colleges. The major portion of the spinoffs associated with their expenditures appears to arise out of the indirect and induced effects of spending the huge labour incomes created by universities.

While the various levels of government finance the bulk of university expenditures, they are also the recipients of substantial tax recoveries on these advances. The total taxes collected on a partial tally of taxes collected on sales (PST and GST), incomes, corporate profits and imports suggest a total of $2.8

TABLE 1
THE ECONOMIC IMPACT OF UNIVERSITIES AND COLLEGES
PROVINCE WIDE IMPACTS
(IN MILLIONS OF 1992 DOLLARS)

	GENERAL FUNDS	RESTRICTED FUNDS	TOTAL	GENERAL FUNDS	RESTRICTED FUNDS	TOTAL
				1 % DECREASE IN ONTARIO FUNDING		
INITIAL EXPENDITURES	$3,098	$1,008	$4,107	$3,079	$1,006	$4,085
GROSS OUTPUT						
TOTAL IMPACT	$6,224	$2,142	$8,366	$6,184	$2,137	$8,321
INITIAL	$788	$574	$1,363	$783	$573	$1,356
INDIRECT AND INDUCED	$5,436	$1,568	$7,004	$5,401	$1,564	$6,965
MULTIPLIER	2.01	2.12	2.04	2.01	2.12	2.04
GROSS DOMESTIC PRODUCT						
TOTAL IMPACT	$7,258	$2,082	$9,340	$7,212	$2,077	$9,289
INITIAL	$2,674	$693	$3,367	$2,657	$692	$3,349
INDIRECT AND INDUCED	$4,584	$1,389	$5,973	$4,555	$1,385	$5,940
MULTIPLIER	2.34	2.06	2.27	2.34	2.06	2.27
LABOUR INCOME						
TOTAL IMPACT	$5,605	$1,535	$7,140	$5,569	$1,531	$7,100
INITIAL	$2,546	$615	$3,161	$2,530	$613	$3,143
INDIRECT AND INDUCED	$3,059	$920	$3,979	$3,039	$918	$3,957
EMPLOYMENT (PERSON YRS)						
TOTAL IMPACT	143,935	38,144	182,079	143,012	38,050	181,062
INITIAL	77,742	19,113	96,855	77,243	19,066	96,309
INDIRECT AND INDUCED	66,193	19,031	85,224	65,769	18,984	84,753
MULTIPLIER	1.85	2.00	1.88	1.85	2.00	1.88
TAXES (TOTAL)						
TOTAL	$2,199	$621	$2,820	$2,185	$620	$2,804
PROVINCIAL	$557	$160	$716	$553	$159	$712
FEDERAL	$1,515	$428	$1,943	$1,505	$427	$1,932
MUNICIPAL	$128	$34	$162	$127	$34	$161
IMPORTS						
TOTAL	$1,569	$571	$2,140	$1,559	$569	$2,128
FROM OTHER COUNTRIES	$769	$337	$1,106	$764	$336	$1,100
FROM OTHER PROVINCES	$800	$234	$1,034	$795	$233	$1,028

TOTAL IMPACT = DIRECT + INDIRECT + INDUCED

Figure 1

ECONOMIC IMPACTS: SELECTED INDICATORS
UNIVERSITIES & COLLEGES EXPENDITURES

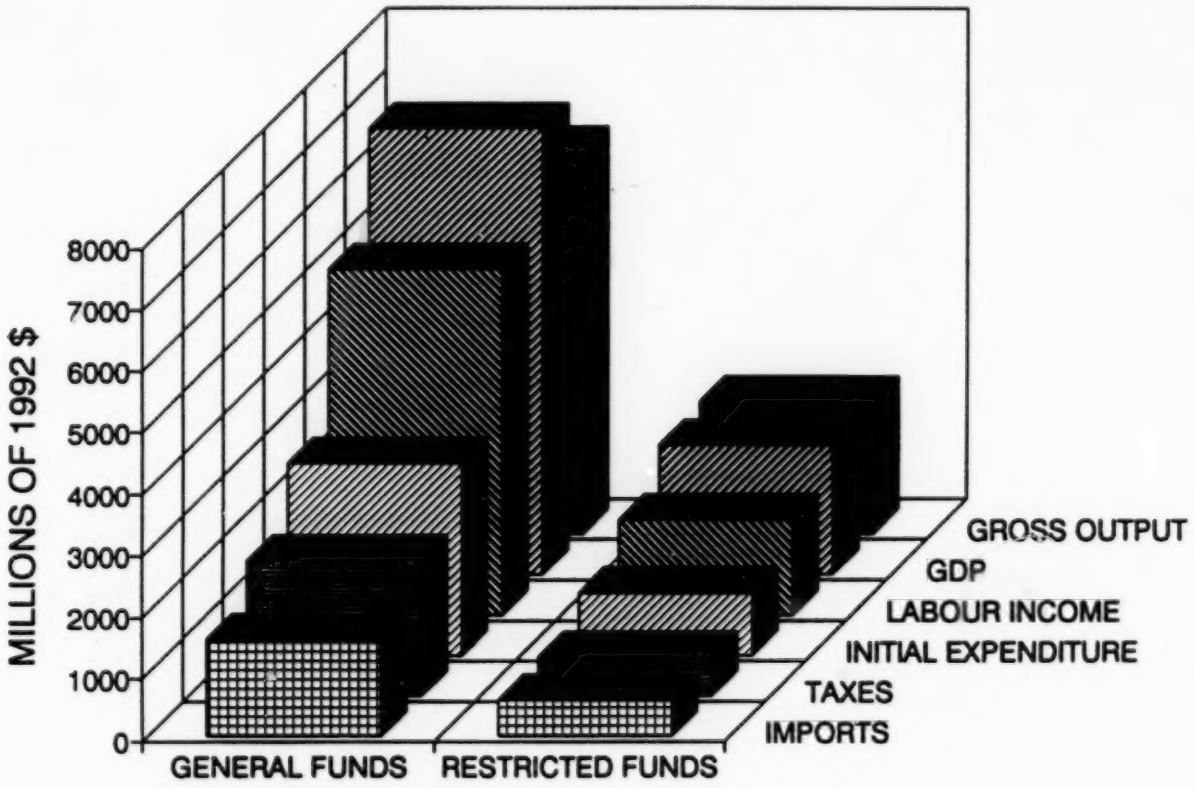
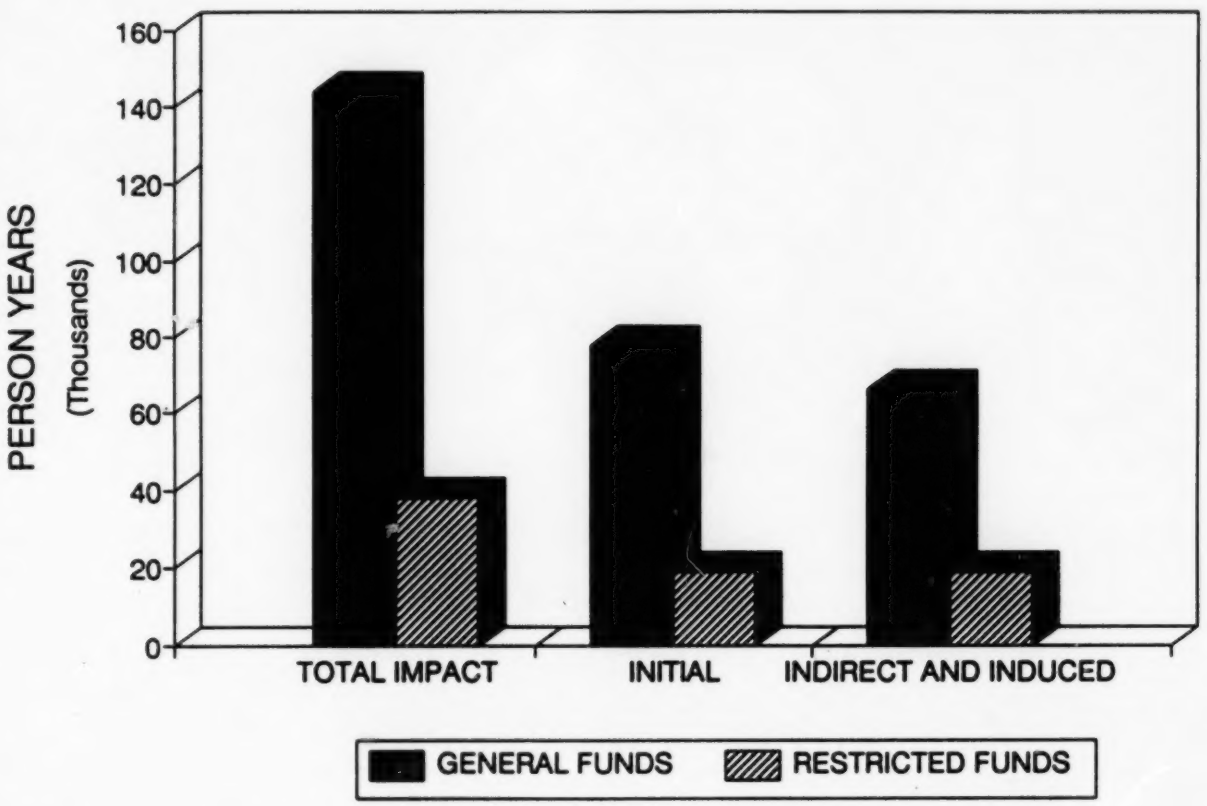


Figure 2

THE EMPLOYMENT IMPACTS OF UNIVERSITIES AND COLLEGES 1992



billion. The lion's share is that of the federal government with a total of about $1.9 billion, with the provincial government collecting $716 million and the local governments about $162 million. Viewed differently, the federal and provincial governments contributed to universities slightly less than what they collected from the impacts of their activities in 1992 ($2.55 billion).

Four tables and four figures are devoted to the presentation of the economic impact results associated with universities and their colleges, and with each component of the system separately. Indeed, universities dominate the system. That is why our discussion will concentrate on their expenditures and impacts. Although most of our tables and figures reveal the impacts of both universities and their affiliated colleges on a consolidated basis, only universities will be discussed in detail here.

The results in Table 1 indicate clearly that the General Funds' expenditures explain the largest share of the total impact. There are, however, some significant differences among the various expenditure categories and the impacts they generate. These differences become clearer when multipliers are considered. It is not surprising to find that the General Funds' expenditures dominate the magnitudes of impacts and the income multiplier, but appear significantly less efficient than items under Restricted Funds in terms of per dollar impacts on gross output and employment. Thus, the income multiplier associated with General Funds' expenditures is over 2.34, whereas that of Restricted Funds is only 2.06. The picture is reversed for gross output and the employment multipliers, where General Funds' multipliers are 2.01 and 1.85, and the corresponding multipliers of Restricted Funds are 2.12 and 2.00, respectively. There are good reasons for these differences to emerge. First, the Restricted Funds involve high expenditures on buildings and equipment. A good part of the equipment purchased is imported from the rest of the world instead of being domestically sourced. Second, capital purchases involve capital intensive industries with limited domestic value added. Third, capital projects, particularly construction expenditures, tend to sustain a large employment impact. It is important to note, however, that regardless of the type of expenditure, the income multipliers associated with university expenditures are relatively high. The average income multiplier in Ontario is only 1.35.

The reason university income multipliers are high lies in the fact that a high proportion of university expenditures go directly into labour income. In 1992, the share of wages in operating expenditures was about 70 percent, but when employee benefits are added to wages the share rises to 80.5 percent (*COU, Financial Report 1991-1992*, P.27). It is also the case that for most of the expenditure categories, the proportion of domestic output in total purchases is also relatively high. These two factors combine to raise the value added impact and the share of the domestic economy in total impact. Actually, the share of total imports in total gross output sustained by university expenditures is only 25.5 percent. This ratio is significantly below the provincial average of about 38 percent. Perhaps more relevant here is the fact that the total imports associated with university expenditures also divide equally between imports from other provinces and imports from the rest of the world. Again this is a marked departure from the average Ontario trends depicted by the Input Output Tables of 1984.

A total of 182,079 person years is associated with the universities and their affiliated colleges' expenditures. Naturally, the largest shares are produced by the expenditures through General Funds. On a per million dollar of expenditure, the largest number of jobs are also associated with these expenditures. The numbers vary between a high of 46.5 person years associated with General Funds' expenditures and 37.8 person years associated with Restricted Funds. In either case the number of person years of employment per million dollars of universities' expenditure is significantly higher than the corresponding figures associated with other industrial sectors where the average is 25 person years.

There are also some interesting differences between the General Funds' tax impacts and those associated with Restricted Funds. Per dollar of expenditure on General Funds' activities, the three levels of government collect 70 cents. Alternatively they collect only 62 cents on every dollar of expenditure under the Restricted Funds.

THE ECONOMIC IMPACT OF A ONE PERCENT DECREASE IN ONTARIO FUNDING

Ontario funding represents the major, but not the exclusive, source of university operating and capital funds. The recent recession in Ontario has particularly decreased the provincial tax base and brought in its wake decreases in transfer payments from the federal to the provincial governments. The contractions in government revenues have led to decreases in public grants and support for the universities. The impacts of this contraction on government support to universities has been drastic. Class sizes have increased and many programs have either been scaled down or phased out. While it is not possible to measure accurately and quantitatively the impacts of these cuts on the quality and delivery of education, it is possible to trace their impacts on the economic contribution of universities in much the same way we have measured the economic impact of university expenditures above.

The largest share of Ontario funding goes to the General Fund and a smaller part to the Restricted Fund. Thus a one percent decrease in Ontario funding should be allocated in a proportionate manner to both of these funds. Furthermore, the resulting decrease should also be distributed over the items and objects of expenditures proportionately thus preserving the relative weights of the component items.

In Tables 1 and 2, and Figures 3 and 4 we present the results of carrying out this proportionate cut of one percent in total Ontario government funding of universities and their affiliated colleges. The results are significant and go far beyond university walls. First, total funding drops by $22.3 million. Total sales fall by $45.2 million, but total income (GPI) falls by $51.2 million. The most pronounced impact is seen in the decline of over 1,017 person years of employment. Provincial government revenues will decline by $4 million and total tax collections of all levels of government by $16.0 million. With imports from other provinces falling too, the reverberations of the cut will be felt across Canada.

TABLE 2
THE NET ECONOMIC IMPACT OF A 1 PERCENT DECREASE IN ONTARIO FUNDING
PROVINCE WIDE IMPACTS
(IN MILLIONS OF 1992 DOLLARS)

	GENERAL FUNDS	RESTRICTED FUNDS	TOTAL
INITIAL EXPENDITURES	$19.9	$2.4	$22.3
GROSS OUTPUT			
TOTAL IMPACT	$39.9	$5.3	$45.2
INITIAL	$5.1	$1.4	$6.5
INDIRECT AND INDUCED	$34.6	$4.0	$38.6
GROSS DOMESTIC PRODUCT			
TOTAL IMPACT	$46.1	$5.1	$51.2
INITIAL	$16.9	$1.7	$18.6
INDIRECT AND INDUCED	$29.3	$3.4	$32.7
LABOUR INCOME			
TOTAL IMPACT	$35.9	$3.9	$39.8
INITIAL	$16.3	$1.9	$18.2
INDIRECT AND INDUCED	$19.5	$2.1	$21.6
EMPLOYMENT (PERSON YRS)			
TOTAL IMPACT	923	94	1,017
INITIAL	499	47	546
INDIRECT AND INDUCED	424	47	471
TAXES (TOTAL)			
TOTAL	$14.4	$1.6	$16.0
PROVINCIAL	$3.6	$0.4	$4.0
FEDERAL	$9.9	$1.1	$11.0
MUNICIPAL	$0.9	$0.1	$1.0
IMPORTS			
TOTAL	$10.4	$1.8	$12.2
FROM OTHER COUNTRIES	$5.2	$0.9	$6.1
FROM OTHER PROVINCES	$5.2	$0.9	$6.1

TOTAL IMPACT = DIRECT + INDIRECT + INDUCED

Figure 3

ECONOMIC IMPACT OF A 1 % DECREASE IN ONTARIO GOVERNMENT FUNDING OF COLLEGES AND UNIVERSITIES

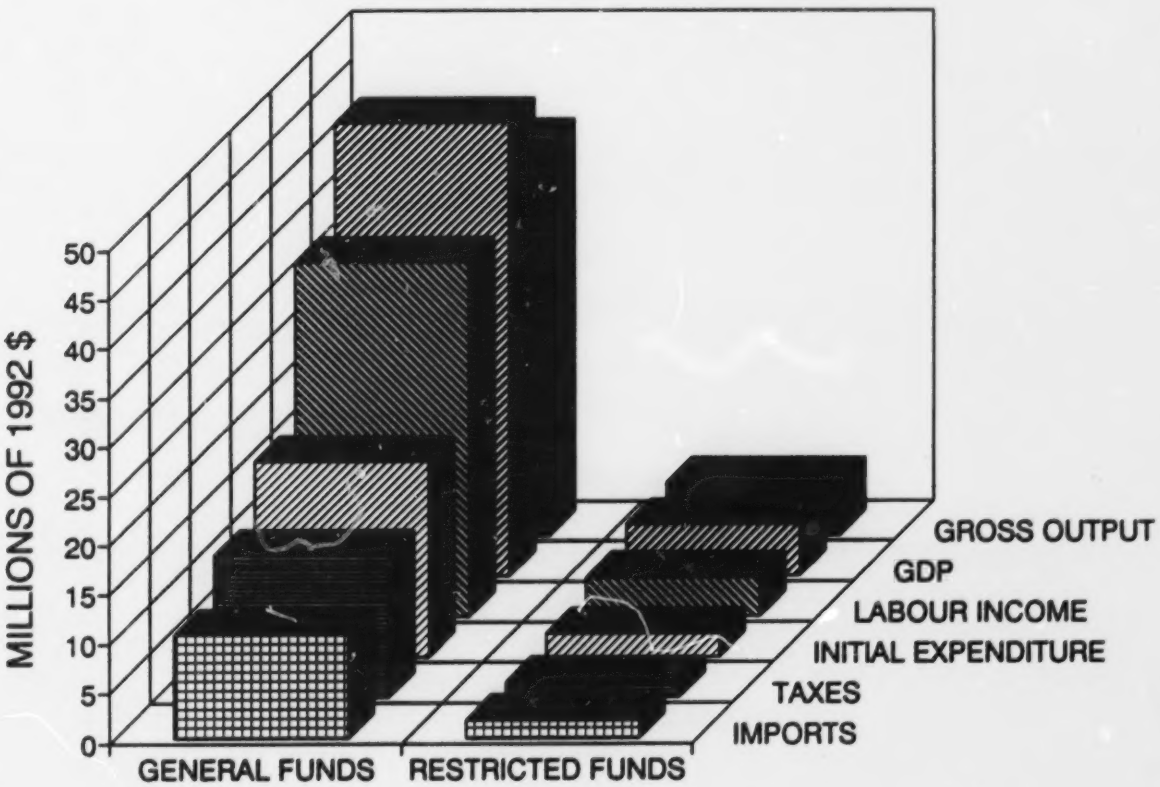
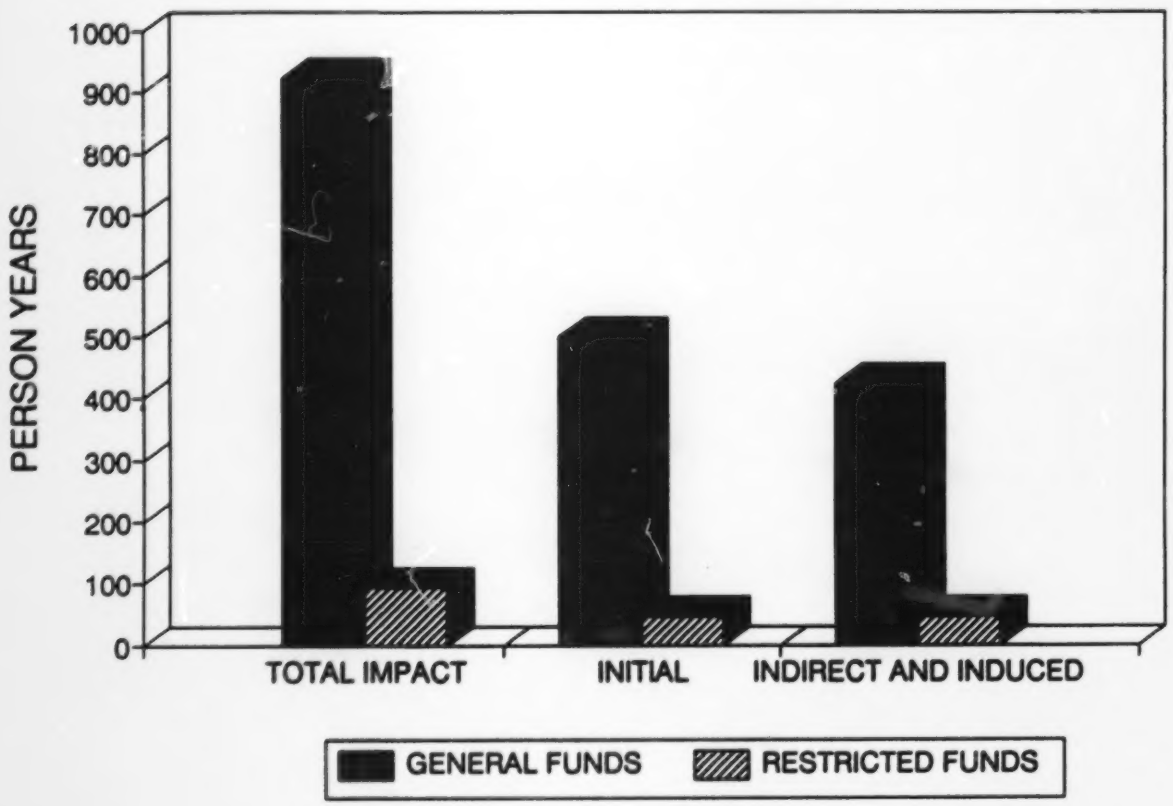


Figure 4

THE EMPLOYMENT IMPACTS OF A 1% DECREASE IN ONTARIO FUNDING OF UNIVERSITIES



Since the impact system is linear, a cut of one percent in Ontario funding of universities will have the same impact, but in the opposite direction, of a one percent increase in funding.

PROVINCE WIDE IMPACTS OF INDIVIDUAL UNIVERSITY EXPENDITURES

Table 4 presents similar impact results to those in Table 1, but for each university within the system on a separate basis. The figures in Table 3 define the input figures that were used to derive the impact results. Surely, it would be difficult and tedious to analyze each of these universities separately. A summary of the most salient and comparative results are presented below.

Naturally, the various magnitudes of impact are sensitive to the size of the expenditures. Large universities tend indeed to produce large impacts. It is equally true that impacts are also sensitive to the nature of the expenditures; the type of goods and services purchased and the location of these purchases are significant determinants of impact magnitudes. To accommodate these sensitivities, two perspectives are displayed below. The first presents comparative aggregative data on income, employment and taxes by university. The second translates the aggregative data into efficiency data in terms of income and employment multipliers and taxes recovered per one dollar of expenditure.

Several observations can be noted regarding the displayed results:

First, the totals over all universities in Tables 3 and 4 do not sum exactly to the aggregate data displayed in Table 1 as colleges are excluded. Second, there are no significant differences in the province wide impacts among universities. Third, minor but important differences are noticeable under each efficiency indicator.

Income multipliers range between a low of 2.15 associated with Algoma and Hearst expenditures and a high 2.40 associated with O.I.S.E. expenditures. Most other universities show a figure close to the average of 2.27. Larger universities show relatively high but differential income multipliers. Employment multipliers are less differential; they are bunched around 1.90 and vary between a low of 1.82 associated with O.I.S.E. and 1.97 associated with Hearst. Typically, universities located in large, urban areas tend to show lower employment efficiencies than those in smaller towns.

It is also true that, generally, a one dollar expenditure by universities supports the recovery of about 69 cents by all three levels of government. The range here is also limited, it varies between a low of 63 cents associated with the expenditures of Hearst and a high of 72 cents for O.I.S.E.

The local impacts of university expenditures are typically consistent and significant. Their noncyclical pattern shields the economies and sectors dependent on these expenditures from wide swings characteristic of market oriented economies and regions with limited and deficient economic bases. In this study we restricted ourselves to province wide impacts. Readers interested in local impacts can refer to our 1989 report.

CONCLUSION

Universities make an important economic contribution to the province and the regions in which they are located that goes far beyond their primary role of providing high quality, advanced and accessible education. While it may be difficult to ascertain precisely the economic value of educating engineers, scientists, professionals and researchers, there is no doubt about the importance and significance of this contribution. Less appreciated and known is the fact that universities are major employers of people and significant contributors to the economic stability and vigour of the provincial economy, as well as of regional economies.

Universities sustained over 182 thousand person years of employment and added another $9 billion to the Gross Provincial Product of Ontario in 1992. Their high and stable local impacts have shielded several university towns and regions from the swings and fluctuations of the macroeconomy. They can be expected to maintain these impacts given their stable performance over the years. These impacts are deliberately chosen to be conservative. We have not included even the net expenditure of out-of-province and out-of-country student expenditures on books and lodging. We have also opted not to add the induced investments of industries that naturally agglomerate near universities. Anecdotal evidence clearly suggests the presence of such a tendency at a number of locations. Witness, for instance, the mushrooming of microelectronics-based industries in the vicinity of the University of Waterloo.

It is not surprising to find that a one percent drop in Ontario funding of universities carries with it serious declines in income and employment for the province, the regions and the Canadian economy at large. These declines are multiples of the original decrease.

TABLE 3
TOTAL UNIVERSITY EXPENSES BY OBJECT FOR THE FISCAL YEAR ENDED 30 APRIL, 1992
(THOUSANDS OF 1992 DOLLARS)

	Brock	Carleton	Guelph	Lakehead	Laurentian	Algoma	Nipising	Hearst	McMaster	OC of Art	O.I.S.E.
Salaries	$52,096	$128,043	$173,228	$44,942	$47,550	$4,854	$9,625	$1,620	$201,577	$12,183	$33,353
Library Acquisitions	$1,682	$3,103	$2,847	$1,208	$1,349	$141	$351	$46	$5,001	$89	$355
Equipment	$3,145	$8,371	$16,326	$1,701	$2,297	$147	$967	$44	$6,936	$405	$798
Operational Supplies	$5,302	$12,153	$21,924	$3,414	$3,935	$291	$1,674	$124	$46,749	$1,047	$1,421
Cost of Goods Sold	$3,772	$6,279	$10,683	$3,045	$2,133	$303	$0	$61	$9,212	$182	$821
Utilities	$2,332	$5,919	$9,899	$1,871	$1,758	$112	$102	$27	$5,904	$381	$481
Municiple Taxes	$422	$1,161	$1,042	$322	$347	$28	$58	$5	$962	$97	$62
Renovations	$2,104	$6,488	$2,123	$796	$5,244	$75	$249	$735	$26,314	$382	$119
Contracted Services	$309	$8,900	$3,723	$1,438	$1,663	$3	$999	$1	12,802	$391	$3,337
Scholarships	$605	$3,218	$2,838	$611	$377	$20	$147	$0	$4,105	$148	$965
Interest	$1,201	$1,951	$4,285	$866	$402	$141	$0	$2	$2,127	$0	$0
Site Services	$0	$0	$42	$387	$120	$0	$0	$0	$0	$0	$0
Buildings	$3,636	$7,177	$6,776	$5,393	$1,819	$2,316	$951	$0	$0	$0	$0
Misc.	$1,227	$6,699	$9,963	$3,328	$3,833	$504	$845	$317	$9,093	$936	$1,832
Internal Cost Allocations	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL	$78,033	$199,482	$265,699	$69,342	$72,827	$8,935	$15,988	$2,982	$320,782	$16,241	$43,544

Source: Council of Ontario Universities. Financial Report of Ontario Universitied, 1991-1992. Volume I - Universities. December, 1992.

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TABLE 3 (CONT'D)
TOTAL UNIVERSITY EXPENSES BY OBJECT FOR THE FISCAL YEAR ENDED 30 APRIL, 1992
(THOUSANDS OF 1992 DOLLARS)

	Ottawa	Queen's	Ryerson	Toronto	Trent	Waterloo	Western	W. Laurier	Windsor	York	TOTAL
Salaries	$199,978	$192,355	$97,869	$525,536	$35,596	$187,994	$251,902	$49,451	$92,255	$258,998	$2,601,005
Library Acquisitions	$4,005	$4,989	$1,459	$12,419	$718	$4,356	$5,183	$1,386	$2,247	$4,742	$57,676
Equipment	$13,605	$16,006	$9,394	$36,345	$2,468	$12,135	$24,884	$2,411	$6,535	$13,078	$178,018
Operational Supplies	$17,509	$24,414	$5,279	$72,004	$3,121	$29,603	$26,423	$5,491	$6,847	$15,754	$304,479
Cost of Goods Sold	$162	$1,937	$6,263	$19,729	$2,114	$16,840	$17,807	$4,163	$5,980	$13,453	$125,159
Utilities	$6,487	$7,167	$3,644	$21,283	$1,794	$7,048	$6,510	$1,332	$3,330	$12,766	$100,167
Municiple Taxes	$1,496	$1,592	$722	$2,860	$282	$1,968	$2,383	$419	$873	$1,758	$18,879
Renovations	$5,604	$12,325	$888	$23,769	$333	$2,688	$5,432	$2,516	$2,759	$5,169	$106,112
Contracted Services	$5,965	$14,662	$6,337	$13,418	$2,299	$502	$4,334	$272	$293	$2,810	$74,488
Scholarships	$5,201	$9,063	$467	$14,670	$793	$3,910	$6,737	$814	$1,192	$3,888	$59,789
Interest	$2,969	$1,062	$5,286	$2,616	$426	$1,592	$4,723	$1,549	$1,120	$11,562	$43,900
Site Services	$0	$3,694	$11,888	$0	$0	$1,662	$128	$7	$1,229	$5,053	$24,210
Buildings	$14,424	$4,363	$17,275	$19,643	$5,612	$5,685	$18,087	$5,960	$9,989	$33,788	$163,114
Misc.	$17,985	$13,927	$4,650	$25,677	$2,234	$9,296	$17,271	$2,462	$3,399	$14,985	$150,463
Internal Cost Allocations	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL	$295,390	$307,606	$171,441	$789,969	$57,790	$285,279	$391,804	$78,253	$138,048	$397,824	$4,007,459

TABLE 4
THE ECONOMIC IMPACT OF UNIVERSITIES
PROVINCE WIDE IMPACTS
(IN MILLIONS OF 1992 DOLLARS)

	ALGOMA	BROCK	CARLETON	GUELPH	HEARST	LAKEHEAD	LAURENTIAN	McMASTER	NIPISING	ONTARIO COLLEGE OF ART	O.I.S.E.
INITIAL EXPENDITURES	$6,936	$76,033	$199,482	$265,899	$2,982	$69,342	$72,627	$320,782	$15,966	$16,241	$43,844
GROSS OUTPUT											
TOTAL IMPACT	$18,328	$158,211	$408,280	$545,197	$6,165	$141,173	$148,151	$658,772	$33,084	$32,434	$87,082
INITIAL	$4,033	$24,910	$67,040	$86,791	$1,357	$23,467	$24,553	$114,138	$6,158	$3,813	$9,184
INDIRECT AND INDUCED	$14,293	$133,301	$339,250	$458,406	$4,808	$117,706	$123,598	$542,634	$26,946	$28,621	$77,918
MULTIPLIER	2.05	2.03	2.04	2.05	2.07	2.04	2.03	2.05	2.07	2.00	2.00
GROSS DOMESTIC PRODUCT											
TOTAL IMPACT	$10,189	$177,841	$452,464	$605,140	$6,408	$156,821	$164,877	$728,465	$35,856	$36,366	$104,566
INITIAL	$6,661	$64,366	$182,633	$218,649	$2,222	$56,474	$59,320	$259,370	$12,894	$14,153	$36,741
INDIRECT AND INDUCED	$12,508	$113,446	$288,531	$386,490	$4,184	$100,347	$105,557	$467,114	$23,163	$24,213	$65,824
MULTIPLIER	2.15	2.28	2.27	2.28	2.15	2.26	2.26	2.26	2.24	2.36	2.40
LABOUR INCOME											
TOTAL IMPACT	$14,240	$136,832	$346,775	$463,558	$4,779	$119,501	$125,753	$554,185	$27,366	$29,724	$81,315
INITIAL	$6,044	$60,416	$162,882	$204,590	$2,021	$52,783	$55,600	$243,799	$11,882	$13,605	$37,503
INDIRECT AND INDUCED	$8,196	$75,416	$192,813	$258,969	$2,758	$66,708	$70,154	$310,386	$15,486	$16,119	$43,812
EMPLOYMENT (PERSON YRS)											
TOTAL IMPACT	351	3,466	8,837	11,848	118	3,031	3,191	14,275	702	766	2,106
INITIAL	176	1,833	4,706	6,291	60	1,589	1,669	7,651	374	417	1,156
INDIRECT AND INDUCED	174	1,623	4,130	5,556	58	1,432	1,502	6,624	327	348	949
MULTIPLIER	1.98	1.89	1.88	1.88	1.97	1.90	1.89	1.97	1.87	1.83	1.82
TAXES (TOTAL)											
TOTAL	$5,779	$53,383	$136,583	$181,697	$1,939	$47,181	$48,598	$218,182	$10,679	$11,530	$31,178
PROVINCIAL	$1,490	$13,848	$34,740	$46,283	$494	$12,040	$12,693	$55,332	$2,741	$2,944	$7,939
FEDERAL	$3,980	$37,008	$93,699	$126,407	$1,341	$32,723	$34,379	$149,606	$7,394	$8,011	$21,759
MUNICIPAL	$310	$2,732	$6,974	$9,027	$104	$2,417	$2,544	$10,832	$544	$575	$1,478
IMPORTS											
TOTAL	$4,390	$38,772	$104,092	$144,810	$1,588	$35,844	$37,987	$154,283	$8,806	$8,389	$22,432
FROM OTHER COUNTRIES	$2,230	$18,105	$53,176	$75,588	$877	$17,954	$18,637	$75,397	$4,917	$4,301	$11,080
FROM OTHER PROVINCES	$2,160	$18,667	$50,916	$68,218	$722	$17,890	$18,330	$78,886	$3,991	$4,089	$11,352

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TABLE 4 (CONT'D)
THE ECONOMIC IMPACT OF UNIVERSITIES
PROVINCE WIDE IMPACTS
(IN MILLIONS OF 1992 DOLLARS)

	OTTAWA	QUEEN'S	RYERSON	TORONTO	TRENT	WATERLOO	WESTERN	WINDSOR	WILFRED LAURIER	YORK	TOTAL
INITIAL EXPENDITURES	$285,360	$307,606	$171,441	$788,969	$57,790	$285,279	$391,804	$138,048	$78,253	$387,824	$4,007,459
GROSS OUTPUT											
TOTAL IMPACT	$668,607	$627,847	$352,311	$1,608,294	$116,256	$582,681	$801,491	$279,008	$158,551	$805,364	$8,182,043
INITIAL	$88,715	$104,578	$72,383	$246,803	$21,119	$91,407	$130,782	$43,728	$27,589	$133,180	$1,327,786
INDIRECT AND INDUCED	$507,892	$523,071	$279,928	$1,358,391	$97,139	$491,254	$670,709	$235,278	$131,962	$672,174	$6,854,257
MULTIPLIER	2.02	2.04	2.05	2.03	2.05	2.04	2.05	2.02	2.04	2.02	2.04
GROSS DOMESTIC PRODUCT											
TOTAL IMPACT	$660,548	$668,048	$374,212	$1,814,671	$129,329	$650,218	$868,018	$313,806	$175,882	$800,655	$9,114,374
INITIAL	$247,477	$251,128	$131,889	$656,675	$48,179	$234,902	$319,979	$113,500	$63,050	$325,539	$3,285,927
INDIRECT AND INDUCED	$433,071	$447,921	$242,324	$1,157,796	$83,150	$415,316	$568,038	$200,306	$112,831	$575,117	$5,828,448
MULTIPLIER	2.30	2.27	2.18	2.30	2.34	2.28	2.27	2.27	2.25	2.28	2.27
LABOUR INCOME											
TOTAL IMPACT	$522,588	$536,122	$280,808	$1,382,214	$98,285	$496,782	$679,503	$239,443	$133,857	$684,017	$6,987,360
INITIAL	$234,287	$238,402	$130,381	$620,708	$42,879	$220,857	$299,589	$108,558	$58,744	$303,685	$3,085,361
INDIRECT AND INDUCED	$288,322	$298,720	$150,448	$771,505	$55,309	$277,935	$379,904	$132,885	$74,913	$381,252	$3,882,008
EMPLOYMENT (PERSON YRS)											
TOTAL IMPACT	13,301	13,709	7,094	36,882	2,487	12,799	17,259	6,080	3,386	17,282	177,885
INITIAL	7,135	7,341	3,818	19,141	1,315	6,809	9,108	3,201	1,778	9,108	94,504
INDIRECT AND INDUCED	6,166	6,362	3,405	18,841	1,182	5,999	8,153	2,859	1,608	8,178	83,181
MULTIPLIER	1.86	1.87	1.84	1.86	1.80	1.88	1.80	1.89	1.80	1.80	1.88
TAXES (TOTAL)											
TOTAL	$204,858	$208,014	$112,505	$542,235	$38,788	$185,517	$266,488	$84,871	$52,805	$271,178	$2,733,882
PROVINCIAL	$62,307	$63,592	$28,843	$138,538	$9,925	$48,972	$68,417	$24,185	$13,538	$68,243	$868,842
FEDERAL	$142,160	$144,740	$77,884	$378,845	$28,882	$135,887	$188,388	$58,574	$38,814	$187,830	$1,865,802
MUNICIPAL	$10,392	$10,682	$6,038	$27,082	$2,007	$8,948	$13,728	$4,912	$2,756	$14,014	$139,148
IMPORTS											
TOTAL	$158,788	$165,213	$88,284	$407,750	$30,328	$148,080	$215,828	$70,041	$38,157	$200,882	$2,088,817
FROM OTHER COUNTRIES	$85,284	$88,094	$46,318	$210,354	$15,888	$75,888	$110,447	$35,711	$18,484	$100,553	$1,078,632
FROM OTHER PROVINCES	$73,502	$77,118	$42,088	$197,488	$14,872	$72,884	$88,382	$34,331	$19,674	$100,328	$1,007,885

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GLOSSARY OF TERMS

Gross Output: (or Gross Sales)

This is the total value of goods and services sold by businesses during the year in sustaining the project's normal year operations. Direct sales include all the value of goods and services bought for on-site operations. They include only a portion of the revenues of the activity; excluded are taxes, depreciation, wages and salaries, and net profits. Total sales include all the turnover of goods and services needed to sustain the activity.

Value Added: (or GPI)

This is a measure of net output. It avoids double counting of products sold during the accounting period by including only final goods. For instance, only chairs are included, whereas the wood that goes into making them does not appear separately. It is equal to income (GPI). It may be calculated by adding wages, interest, rent and profits. Alternatively, it is equal to revenues minus the total cost of purchased inputs.

Labour Income:

This is the wages and salaries component of income.

Multipliers:

This is a measure derived by adding direct, indirect and induced effects (total) and dividing the total thus derived by the original expenditure (revenue). For instance, the income multiplier associated with a given activity is equal to total income divided by the original revenue. Only the employment multiplier is calculated differently. The latter is generated by dividing total employment by direct employment. This difference is necessitated by the fact that in using the general definition in the case of employment would result in dividing employment in person years by dollars of revenue. This would not yield a unitless measure as the multiplier is supposed to be.

Taxes:

The model includes a number of taxes; each is linked directly with the level of government receiving it. For example tariffs on imports are received only by the federal government, whereas business and property taxes are received solely by local (municipal) governments. On the other hand, corporate profit taxes and personal income taxes are shared between the federal and provincial governments.

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